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ORIGINAL ARTICLE

Molecular epidemiology of *Blastocystis* spp. in children referred to Qods hospital in northwest of Iran

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Abstract *Blastocystis* sp. is a polymorphic intestinal parasite in humans and animals. The parasite has a worldwide distribution, especially in developing countries with poor sanitation, exposure to animals, and improper disposal systems. The aim of this study was to identify the subtypes of *Blastocystis* sp. among children of Qazvin, northwest Iran. Totally, 864 stool samples were collected from the children referred to Qods hospital in Qazvin, Iran. Fecal specimens were investigated by formalin-ethyl acetate concentration method and trichrome staining as well as cultivation of all samples in clotted fetal bovine medium. DNA extraction of culture-positive specimens and PCR amplification of 18S ribosomal RNA gene region was performed. The sequences detected were compared with reference genes in the GenBank, and the sequences further deposited in the GenBank database. Data analysis was performed by Chi square test while a p value of < 0.05 was considered as significant. Of 864 isolates, 4.1% (36/864) were positive for *Blastocystis* sp. with infection rate insignificantly higher among the females than males. The highest infection rate was estimated at 6.8% in 6–9 years old age group with abdominal pain as the most common (33%) gastrointestinal sign. No statistically significant difference was found between the variables and *Blastocystis* infection. Molecular analysis clarified the presence of three subtypes of *Blastocystis* including ST1 (56%), ST2 (28%), and ST3 (16%) of among specimens with ST1 as the predominant subtype. A significant association between intestinal signs and the subtypes was not found. Considering ST1 as the predominant subtype, it seems that zoonotic transmission is a main route of human infections with *Blastocystis* sp. in the area studied.

Keywords *Blastocystis* · Epidemiology · Subtype · Iran

Introduction

Blastocystis sp. is one of the most prevalent unicellular parasites of human. The parasite has a global distribution both in developed and developing countries. A higher prevalence of the parasite in developing countries is related to lower sanitation, exposure to animals, and poor hygiene of food or water sources (Tan 2008). *Blastocystis* sp. is living in the intestinal tract of human and animals, so the pathogenicity of the parasite is yet obscure. Although the organism is mostly found in healthy people without any clinical signs nevertheless, the gastrointestinal disorders including irritable bowel syndrome (IBS), diarrhea, flatulence, and abdominal pain may be related to the presence of this parasite (Dogruman-Al et al. 2009).

Microscopic diagnosis of *Blastocystis* spp. is one of the most important challenges in laboratory detection of human

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